

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ۲۱ کلاس
تجربه ۴۰

$$(11 + 31 + 51 + \dots + 251)(21 + 41 + 61 + \dots + 241)$$

در بیان صفر است $2 + 22 = 24$

$1 + 4 = 5$

$24 \times 5 = 120 \rightarrow \boxed{2 = \text{بلان}}$

$$\frac{\sqrt{2} + \sqrt{5}}{\sqrt{10} + 2} = \frac{\sqrt{2} + \sqrt{5}}{\sqrt{2}(\sqrt{5} + \sqrt{2})} = \frac{\sqrt{2}}{2}$$

توان

$$\sqrt{3} \cdot \sqrt{5} = \sqrt{15} \cdot \sqrt{5} = 3 \cdot \sqrt{5} + 3 \cdot \sqrt{5}$$

$2(2) = 4 \rightarrow \sqrt{2}$

$$\sqrt{2} \times \frac{\sqrt{2}}{2} = 1$$

(الف) $\sqrt[4]{(2 + \sqrt{2})^{-1}} \times \sqrt[4]{(1 + \sqrt{2})^2}$

$$\sqrt[4]{\frac{(1 + \sqrt{2})^2}{2 + \sqrt{2}}} = \sqrt[4]{\frac{8 + 2\sqrt{2}}{2 + \sqrt{2}}}$$

$$\sqrt[4]{\frac{2(4 + \sqrt{2})}{2 + \sqrt{2}}} = \sqrt[4]{2}$$

$$\frac{\sqrt{27} - 1}{2 + \sqrt{3}} + (2 - \sqrt{3})^{-1} = \frac{1}{2 - \sqrt{3}} \times \frac{2 + \sqrt{3}}{2 + \sqrt{3}} = \frac{2 + \sqrt{3}}{1}$$

$$\frac{(\sqrt{3} - 1)(2 + \sqrt{3})}{2 + \sqrt{3}} = \sqrt{3} - 1$$

$$\sqrt{3} - 1 + 2 + \sqrt{3} = 1 + 2\sqrt{3}$$

(الف) $\frac{\sqrt{8 + \sqrt{47}} - 2(\sqrt{9} - 1)^{-1}}{5 - \sqrt{4}} \rightarrow \frac{-2}{\sqrt{4} - 1} = \frac{-2}{2 - 1} = -2$

$$\frac{(\sqrt{2} + \sqrt{3})(2 + 3 - \sqrt{4})}{5 - \sqrt{4}} = \frac{1}{2}$$

$$\frac{4\sqrt{2} + 4\sqrt{3} - 1}{5}$$

$\sqrt[4]{27} \times \sqrt[4]{144} \times \sqrt[4]{49} = \sqrt[4]{27 \times 144 \times 49} = \sqrt[4]{27 \times 144 \times 49}$

$\rightarrow \sqrt[4]{27} \times \sqrt[4]{144} \times \sqrt[4]{49} = \sqrt[4]{27 \times 144 \times 49}$

$= 2 \sqrt[4]{27} \times 9 \sqrt[4]{49} = 2 \sqrt[4]{27} \times 9 \sqrt[4]{49}$

$18 \sqrt[4]{27} = \boxed{3 \sqrt[4]{27}}$

(الف) $\frac{\sqrt{1 + \sqrt{3}} + \sqrt{3} - 1}{\sqrt{3} - \sqrt{2}} = \frac{1 + \sqrt{3} + \sqrt{3} - 1 - 2}{\sqrt{3} - \sqrt{2}} = \frac{2\sqrt{3} - 2}{\sqrt{3} - \sqrt{2}}$

$$\frac{2(\sqrt{3} - 1)}{\sqrt{3} - \sqrt{2}} = \frac{2(\sqrt{3} - 1)(\sqrt{3} + \sqrt{2})}{(\sqrt{3} - \sqrt{2})(\sqrt{3} + \sqrt{2})} = \frac{2(\sqrt{3} - 1)(\sqrt{3} + \sqrt{2})}{3 - 2} = 2(\sqrt{3} - 1)(\sqrt{3} + \sqrt{2})$$

$$\frac{3^x + 3^{x+1} + 3^{x+2} + 3^{x+3} + 3^{x+4} + 3^{x+5}}{3^{x-2} + 3^{x-1} + 3^x + 3^{x+1} + 3^{x+2} + 3^{x+3}}$$

$3^x \times \frac{3^0 + 3^1 + 3^2 + 3^3 + 3^4 + 3^5}{3^{-2} + 3^{-1} + 1 + 3 + 3^2 + 3^3} = \frac{3^x \times 121}{3^x \times 121} = 1$

$\left(\frac{3}{2}\right)^x = \frac{9}{4} \rightarrow \boxed{x = 2}$

$\frac{3^x(1 + 3 + 3^2 + 3^3 + 3^4 + 3^5)}{3^x(3^{-2} + 3^{-1} + 1 + 3 + 3^2 + 3^3)} = \frac{121}{121} = 1$

$121/121$

$$a = \sqrt[3]{\sqrt{4}-2}, b = \sqrt[3]{\sqrt{4}+2} \quad (a^3+b^3-3ab)^2(a^3+b^3+3ab)^2 = 4(1-\sqrt{3})$$

$$(a-b)^2(a+b)^2 = (a^2-b^2)^2 = 4(1-\sqrt{3}) \rightarrow (a^2+b^2-2ab)^2 = \sqrt{4}-2+\sqrt{4}+2-2(\sqrt{4}-2)(\sqrt{4}+2)$$

$$2\sqrt{4}-2(4+2-2\sqrt{4})(4+2+2\sqrt{4}) \rightarrow (10^2 - (2\sqrt{4})^2) = 2\sqrt{4}-2(100-94)$$

$$\boxed{2\sqrt{4}-2}$$

①

$$a = \sqrt[3]{\sqrt{3}-2\sqrt{3}} = \sqrt[3]{(1-\sqrt{3})^3} \Rightarrow a = \sqrt{1-\sqrt{3}}$$

$$\left(a + \frac{1}{a}\right)^2 \left(a + \frac{1}{a}\right)^2 = \left(a + \frac{1}{a}\right)^2 - 2 = \left(a^2 + \frac{1}{a^2} + 2 - 2\right)^2 = \left(a^2 + \frac{1}{a^2}\right)^2$$

$$a^2 + \frac{1}{a^2} + 2 = 2(1-\sqrt{3}) + \frac{1}{1-\sqrt{3}} + 2 = 0$$

0, 1, \infty

$$A = \sqrt[3]{\frac{1}{2}\sqrt[3]{14}} \left(\frac{1}{2}\right)^{-\frac{1}{3}} = \sqrt[3]{\frac{1}{2}\sqrt[3]{14}} \times 2\sqrt[3]{2} = 2$$

②

$$(2 \times 4)^{-\frac{1}{2}} = (1)^{-\frac{1}{2}} = \sqrt{\frac{1}{1}} = \boxed{\frac{1}{2}}$$

$$\sqrt{a} = 2\sqrt{a} \frac{10}{\sqrt{a}} \rightarrow \sqrt{a} = 2\sqrt{a} \sqrt{10} \rightarrow 1 = 2\sqrt{10} \rightarrow a = \frac{1}{10}$$

$$\rightarrow a^2 = \frac{1}{100} \rightarrow a = \frac{1}{10}$$

$$\frac{2\sqrt{3}-3}{1+\sqrt{3}} = \frac{2\sqrt{3}}{1+\sqrt{3}} + \frac{1-\sqrt{3}}{1-\sqrt{3}} = \frac{2\sqrt{3}-1+\sqrt{3}}{1-\sqrt{3}} = \boxed{12-12\sqrt{3}}$$

0, 1, \infty

$$(\sqrt{x+a} - \sqrt{x-2})(\sqrt{x+a} + \sqrt{x-2}) = 0+2 \rightarrow \sqrt{x+0} + \sqrt{x-2} = \frac{0+2}{2}$$

$$\sqrt{x+a} + \sqrt{x-2} - 2 = \frac{a}{2} + 2 - 2 = \boxed{\frac{a}{2}}$$

③